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Information Technology

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Towards 2000

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Edited by
L.M. Venter
R.R. Lombard
Foreword

This book contains a collection of papers presented at a Research and Development conference of the South African Institute of Computer Scientists and Information Technologists (SAICSIT). The conference was held on 13 & 14 November 1997 at the Riverside Sun, Vanderbijlpark. Most of the organization for the conference was done by the Department of Computer Science and Information Technology of the Vaal Triangle Campus, Potchefstroom University for Christian Higher Education.

The programming committee accepted a wide selection of papers for the conference. The papers range from detailed technical research work to reports of work in progress. The papers originate mainly from Academia, but also describe work done in and for Industry. It is hoped that the papers give a true reflection of the current research scene in Computer Science and Information Technology in South Africa. Since one of the aims of the conference is Research development, the papers were not subjected to a refereeing process.

A number of people spent numerous hours helping with the organization of this conference. In this regard, we wish to thank the members of the Organizing committee, and the Programming committee who had very little time to screen the abstracts and compile the program. A special thanks goes to the secretary of the department, Mrs Helei Jooste, whose very able work was interrupted by the birth of her first child.
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A neural network model of a fluidised bed

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A neural network was used to model experimental fluidisation data – bubble size and velocity – from a laboratory size fluidised bed column. Experiments were performed for several particle sizes and temperatures.

A classical feedforward neural network trained with a backpropagation algorithm was used. Data pre-processing turned out to be vitally important. Both particle sizes and temperatures were represented as fuzzy sets. This representation took care of a smooth transition from one value to another on the input side of the network thus making training and generalisation of the network easier.

After training, the neural network was capable not only to predict the velocities of bubbles or slugs but also to identify the transition from a bubbling fluidised bed to a slugging bed.